

CLAIMS

1. MSM type photo-detection device designed to detect incident light and comprising reflecting means (2, 52, 82) superposed on a first face of a support (1, 51, 81) to form a first mirror for a Fabry-Pérot type resonant cavity, a layer of material (3, 53, 83) that does not absorb said light, an active layer (4, 54, 84) made of a semiconducting material absorbing incident light and a network of polarization electrodes collecting the detected signal, the electrodes network (5, 62) being arranged on the active layer, the electrodes network being composed of parallel conducting strips at a uniform spacing at a period less than the wavelength of incident light, the electrodes network (5, 62) forming a second mirror for the resonant cavity, the optical characteristics of this second mirror being determined by the geometric dimensions of said conducting strips, the distance separating the first mirror from the second mirror being determined to obtain a Fabry-Pérot type resonance for incident light between these two mirrors.

2. Photo-detection device according to claim 1, characterized in that the reflecting means forming a first mirror are composed of a Bragg mirror (2, 52).

3. Photo-detection device according to claim 2, characterized in that the Bragg mirror (2, 52) is composed of alternating layers of AlAs and AlGaAs d'AlAs and alternating layers of GaInAsP and InP or

alternating layers of AlGaInAs and AlInAs or alternating layers of AlGaAsSb and AlAsSb.

4. Photo-detection device according to  
5 claim 1, characterized in that the reflecting means forming a first mirror are composed of a metallic layer (82).

5. Photo-detection device according to  
10 claim 4, characterized in that the metallic layer (82) forming the first mirror provides a silver, gold or aluminium surface to incident light.

6. Photo-detection device according to  
15 claim 1, characterized in that the reflecting means forming a first mirror are composed of a multilayer dielectric mirror.

7. Photo-detection device according to  
20 claim 1, characterized in that the layer of material (3, 53, 83) that does not absorb light is made of  $\text{Al}_x\text{Ga}_{1-x}\text{As}$  and the active layer (4, 54, 84) is made of GaAs.

25 8. Photo-detection device according to claim 7, characterized in that  $x$  is of the order of 0.35.

9. Photo-detection device according to  
30 claim 1, characterized in that the layer of material (3, 53, 83) that does not absorb light is made of

AlInAs and the active layer (4, 54, 84) is made of InGaAs.

10. Photo-detection device according to  
5 claim 1, characterized in that the electrodes network (5, 62) forms two interdigitated combs.

11. Photo-detection device according to  
claim 1, characterized in that the electrodes network  
10 (5, 62) is composed of said conducting strips that are adjacent to each other and connected in floating potential.

12. Photo-detection device according to  
15 claim 1, characterized in that the conducting strips are made of silver or gold or aluminium.

13. Photo-detection device according to  
claim 1, characterized in that a passive layer of  
20 dielectric material is deposited on the electrodes network.

14. Photo-detection device according to  
claim 13, characterized in that the passivation layer  
25 is made of silicon dioxide or silicon nitride.

15. Photo-detection device according to  
claim 1, characterized in that a second face of the  
support supports an electrode to apply an electrical  
30 field to the device to change the resonant wavelength of the resonant cavity by the opto-electric effect.